

# **Illinois River Watershed Total Phosphorus Criterion Revision**

## **Chapter 45 & 46 Proposed Rules**

Board Meeting  
February 16, 2021



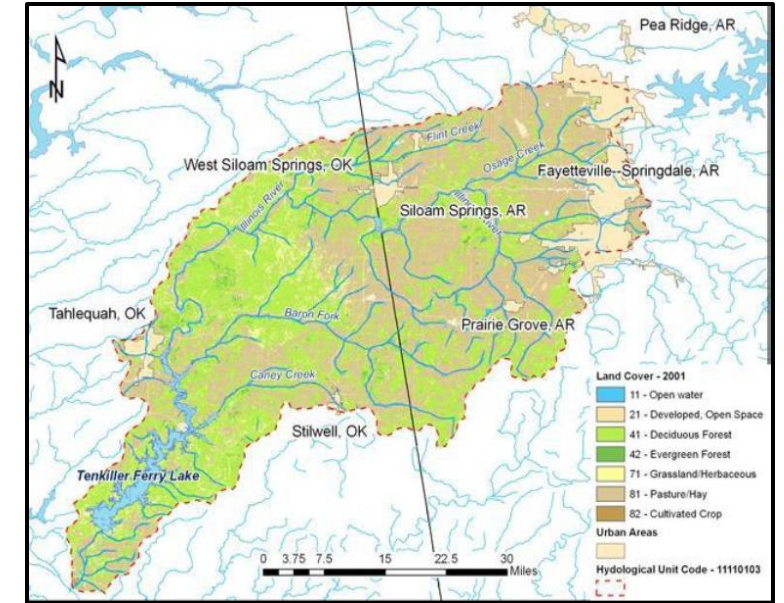
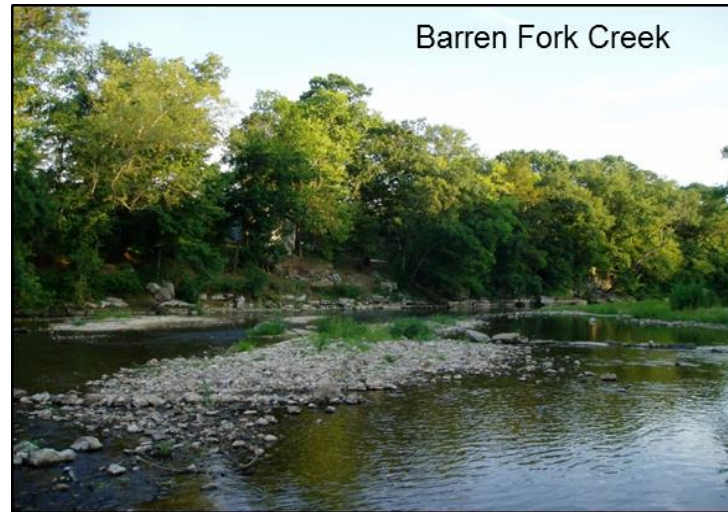
# Outline

- Introduction
- Chapter 45 Proposed Rules
  - Total phosphorus criterion
- Chapter 46 Proposed Rules
  - Critical condition
  - Calculating 6-month average
  - Beneficial use assessment

# Illinois River Watershed



## Scenic Rivers





# Beneficial Uses





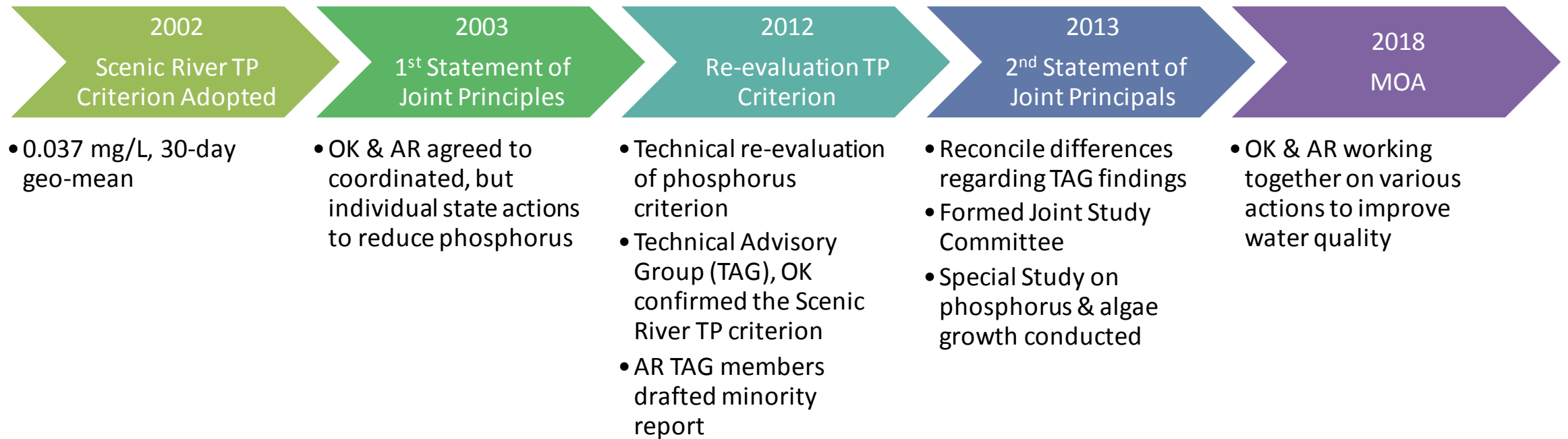
# Aesthetic Beneficial Use



Illinois River at Watts



# History: Total Phosphorus Criterion



# 2013 Second Statement of Joint Principals

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Formed 6-person Joint Study Committee

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Responsible for overseeing study on phosphorus & algae

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June 2014 - April 2016, Ryan King with Baylor University conducted study

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December 2016, Committee Final Report & Recommendations  
accepted by both state Governors

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2020-2021 OWRB rulemaking is an outgrowth of committee recommendations

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# Joint Committee Recommendation

Committee Recommendation	Related WQ Program	Rule Chapter
<b><i>A six-month average total phosphorus level not to exceed 0.035 mg/L</i></b>	Water Quality Criteria	Chapter 45 (Water Quality Standards)
<b><i>based on water samples taken during the CRITICAL CONDITION</i></b>	Water Quality Monitoring	Chapter 46 (Implementation of Water Quality Standards)



# Chapter 45: Water Quality Criteria

## Current Criterion

- **Magnitude**
  - 0.037 mg/L
- **Duration**
  - 30 day geometric mean
- **Frequency**
  - Never to exceed

## Revised Criterion

- **Magnitude**
  - 0.037 mg/L
- **Duration**
  - Rolling 6-month average
- **Frequency**
  - No more than 1 exceedance per 1-year period
  - No more than 3 exceedances per 5-year period

# Chapter 45: Proposed Criterion

The total phosphorus six month rolling average of 0.037 mg/L shall not be exceeded more than once in a one-year period and not more than three times in a five-year period.

# Chapter 46: Critical Condition

- Joint Committee definition

*“the conditions where surface runoff is not the dominant influence of total flow and stream ecosystem processes.”*

- Staff analyses served to create operational definition for implementation

1. Hydrology total flow analysis
2. Hydrology scour analysis



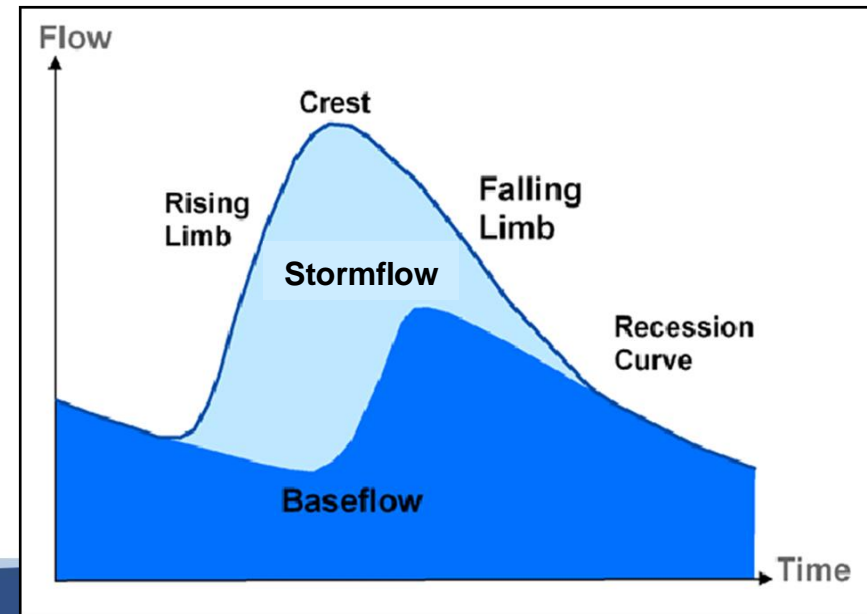
# Chapter 46: Critical Condition

## 1. Total Flow

When is surface runoff dominant and when is it not dominant?

**Hydrograph separation analysis to evaluate flow conditions**

- Effectively & efficiently identify surface runoff versus baseflow conditions
- Utilized USGS gages throughout watershed
- Consistent approach applicable watershed wide



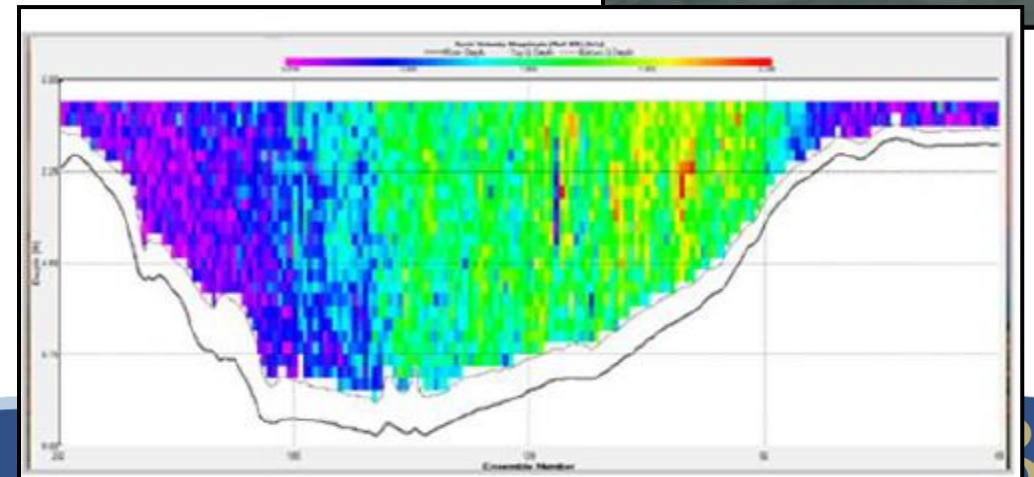
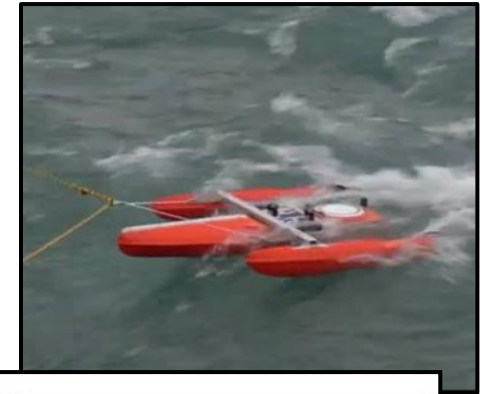
# Chapter 46: Critical Condition

## 2. Stream Ecosystem Processes

**When does flow dominate ecosystem process of interest (benthic algal growth)?**

### **Hydrology scour analysis**

- Results very dynamic and highly variable
- Not consistent across watershed
- Analysis very labor intensive
- Not effective for operational definition



# Chapter 46: Proposed Critical Condition Definition

The critical condition is when baseflow is fifty-five (55%) or greater of the total daily average flow calculated by the USGS hydrograph separation method sliding-interval.



# Chapter 46: 6-month Average Calculation

- How many measured TP values required for each rolling 6-month average?
- Reviewed monitoring programs, found that at least 80% of time at least 1 measured TP value available per month

## 2 Considerations

1. Monitoring programs need some flexibility, no program is perfect
2. Maximize the number of monthly 6-month averages calculated each year

# Chapter 46: Proposed 6-month Average Calculation

The calculation of a rolling 6-month average must include at least four (4) measured values from four separate months.

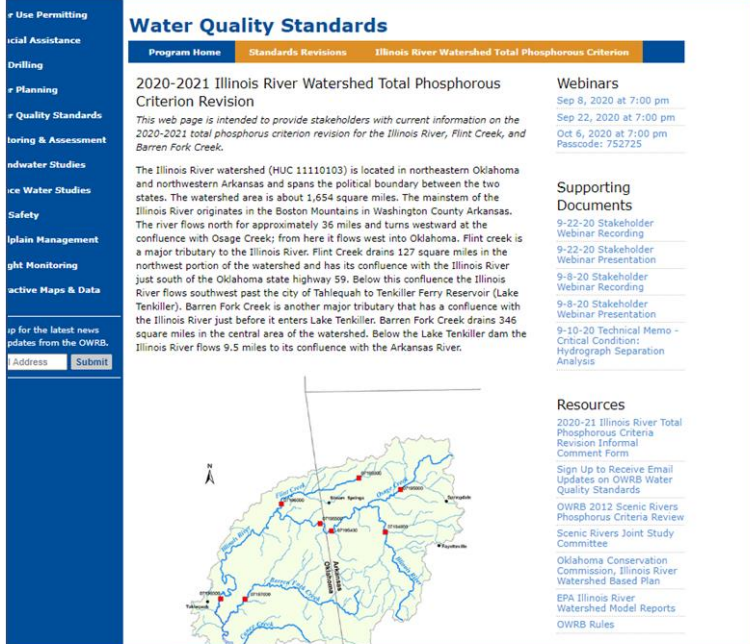
# Chapter 46: Proposed Beneficial Use Assessment

- **Direct implementation of criterion frequency**
  - 1-year
    - No More than 1 exceedance per 1-year period
  - 5-year
    - No More than 3 exceedances per 5-year period
- **Minimum number of samples required**
  - 10 for 1-year period & 30 for 5-year period
  - Consistent with other USAP sample requirements



# Stakeholder Outreach

- Project specific website
- Public Webinars
  - 3 evening webinars in Sept & Oct
  - 40 – 45 participants each
- Targeted Stakeholder Meetings
  - OK Ag Stakeholders
  - OK Environmental Stakeholders
  - NW Arkansas Stakeholders



The screenshot shows the 'Water Quality Standards' website. The left sidebar contains a navigation menu with links: Use Permitting, Technical Assistance, Drilling, Planning, Quality Standards, Monitoring & Assessment, Groundwater Studies, Surface Water Studies, Safety, Riparian Management, Light Monitoring, and Active Maps & Data. The main content area is titled '2020-2021 Illinois River Watershed Total Phosphorous Criterion Revision'. It includes a map of the watershed and a list of resources. The right sidebar contains links to webinars and supporting documents.

**Water Quality Standards**

Program Home | Standards Revisions | Illinois River Watershed Total Phosphorous Criterion

### 2020-2021 Illinois River Watershed Total Phosphorous Criterion Revision

This web page is intended to provide stakeholders with current information on the 2020-2021 total phosphorous criterion revision for the Illinois River, Flint Creek, and Barren Fork Creek.

The Illinois River watershed (HUC 11110103) is located in northeastern Oklahoma and northwestern Arkansas and spans the political boundary between the two states. The watershed area is about 1,654 square miles. The mainstem of the Illinois River originates in the Boston Mountains in Washington County Arkansas. The river flows north for approximately 36 miles and turns westward at the confluence with Osage Creek; from here it flows west into Oklahoma. Flint Creek is a major tributary to the Illinois River. Flint Creek drains 127 square miles in the northwest portion of the watershed and has its confluence with the Illinois River just south of the Oklahoma state highway 59. Below this confluence the Illinois River flows southwest past the city of Tahlequah to Tenkiller Ferry Reservoir (Lake Tenkiller). Barren Fork Creek is another major tributary that has a confluence with the Illinois River just before it enters Lake Tenkiller. Barren Fork Creek drains 346 square miles in the central area of the watershed. Below the Lake Tenkiller dam the Illinois River flows 9.5 miles to its confluence with the Arkansas River.

**Webinars**

- Sep 8, 2020 at 7:00 pm
- Sep 22, 2020 at 7:00 pm
- Oct 6, 2020 at 7:00 pm
- Passcode: 752725

**Supporting Documents**

- 9-22-20 Stakeholder Webinar Recording
- 9-22-20 Stakeholder Webinar Presentation
- 9-8-20 Stakeholder Webinar Recording
- 9-8-20 Stakeholder Webinar Presentation
- 9-10-20 Technical Memo - Critical Condition: Hydrograph Separation Analysis

**Resources**

- 2020-21 Illinois River Total Phosphorous Criteria Revision Informal Comment Form
- Sign Up to Receive Email Updates on OWRB Water Quality Standards
- OWRB 2012 Scenic Rivers Phosphorous Criteria Review
- Scenic Rivers Joint Study Committee
- Oklahoma Conservation Commission, Illinois River Watershed Based Plan
- EPA Illinois River Watershed Model Reports
- OWRB Rules



The image shows the OWRB logo (Oklahoma Water Resources Board) and an announcement for the Illinois River Watershed Total Phosphorous Criterion Revision. It includes a date of October 2, 2020, and links to stakeholder webinar announcements, a link to join the last public webinar, and a link to view webinar recordings and slideshows.

State of Oklahoma  
**OWRB**  
WATER RESOURCES BOARD  
the water agency

October, 2 2020

### Illinois River Watershed Total Phosphorous Criterion Revision

Stakeholder Webinar Announcements

Link to join the last public webinar below

View webinar 1&2 recordings and slideshows now

# Stakeholder Outreach

- **Common Topics of Concern**

1. Concerns regarding critical condition term & P-loading during storm events
2. Desire for critical condition baseflow threshold to be greater
3. Significant concern regarding ongoing pollution in the watershed
4. Desire more implementation actions & enforcement
5. Downstream protection of Lake Tenkiller

# Questions

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Illinois River at Tahlequah